

THIN-FILM TRANSISTORS FORMED ON A FLEXIBLE SUBSTRATE

CROSS-REFERENCE TO RELATED APPLICATIONS

5 This application is a divisional of application Serial Number
MDH 4/15/01 10/109,895, filed July 11, 2002, entitled "Thin-Film Transistors Formed on
and 10/194,895 (US 6,642,042)
a Metal Foil Substrate," invented by Voutsas et al.

BACKGROUND OF THE INVENTION

1. Field of the Invention

10 This invention generally relates to integrated circuit (IC) and
liquid crystal display (LCD) fabrication and, more particularly, to thin-film
transistors (TFTs) formed on a metal foil substrate and a process for
forming the same.

2. Description of the Related Art

15 High quality polycrystalline silicon material is the building
block of high performance TFTs that are used in integrated circuits and
microelectronic devices such as LCD's. The higher the quality of the poly-
Si material, that is, the closer to single-crystal Si material, the better the
performance of the resultant devices. Therefore, it is desirable to develop
20 methods that yield high quality polysilicon (poly-Si) material for display
or other electronic products.

The performance of the device is affected not only by the
crystalline quality of the active layer, but also by the quality of the gate
insulator film that covers the active layer. Both the bulk properties of the
25 gate insulator, as well as the properties of the interface that forms
between the gate insulator and the poly-Si layer, are very important for
the operation of the device. For Si or poly-Si devices, the best gate
insulator film is SiO₂, and the best method of forming a high quality SiO₂
film with excellent bulk and interface properties is by thermal oxidation.

30 A silicon substrate has a sufficiently high melting point to
withstand thermal treatments up to temperatures in the range of 1200°C.